REMARKS

Reconsideration of all grounds of rejection in the Office Action, and allowance of all of the pending claims are respectfully requested in light of the above amendments and the following remarks. Claims 1-5 remain pending herein. Claim 1 was amended to clarify the recitation regarding the step of creating a data frame having a structure comprising a security frame including an ONU ID field having a logical link field for identifying management entities, and the SID field associating with the logical link ID field as a group ID to create a plurality of management entities; clear support for this amendment is located at least in the specification at least at page 5, line 20, to page 6, line 3, and page 10, lines 5-6, as well as being shown, for example, in FIG. 3.

More particularly, claim 1 has been amended to recite a method for transmitting security data between an OLT (Optical Line Termination) and a destination user independently of a physical layer in an EPON (Ethernet Passive Optical Network) system having a plurality of ONUs:

> a) creating an Ethernet transmission frame comprising a data field having encrypted security data, a key information field for storing key information used for decrypting the encrypted security data of the data field, and said transmission frame further comprising a security frame providing an indication that security data is being transmitted, said security frame having an ONU ID field for indicating ONU ID information identified by an ONU with the destination user and a user ID field for indicating a security ID (SID) identified by the destination user,
> wherein the ONU ID field includes a group ID bit field, a logical link ID field, and a security ID field for association with the logical link ID field to provide a group ID for a plurality of management entities controlled by a single ONU, and wherein a variety of classes are provided according to a total number of security IDs of said security ID field controlled by the management entity; and

4

> b) transmitting the Ethernet transmission frame independently of a physical (PHY) layer in the EPON system to a destination user.

With regard to the objections of claim 1, the specification, and the rejection under 35 U.S.C. §112, first paragraph, Applicant respectfully submits that the amendments to claim 1 find clear support in the specification at least in the aforementioned pages and drawing such as to reasonably convey one of skill in the art to practice the invention. Reconsideration and withdrawal of all grounds of rejection are respectfully submitted.

With regard to the rejection under 35 U.S.C. §112, second paragraph, Applicant respectfully submits that encrypted security data as recited in claim 1 above has proper antecedent basis. Reconsideration and withdrawal of this ground of rejection are respectfully requested.

Claims 1-5 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sala et al. (U.S. 2003/0117998) ("Sala") and further in view of Rothenberg (U.S. 5,432,850). Applicant respectfully submits that this ground of rejection is overcome for the reasons indicated herein below.

Claim 1 of the present invention recites a method for transmitting security data between an OLT and a destination user independently of a physical in an EPON, which includes the steps of creating an Ethernet transmission frame comprising *inter alia*, a data field having encrypted security data, a key information field for storing key information used for decrypting the security data, and further comprising a security frame providing an indication that security data is being transmitted, the security frame having an ONU ID field for indicating ONU ID information identified by the ONU with the destination user and a user ID field for indicating a security ID (SID). The ONU ID field includes a

group ID bit field, a logical link ID field, and a security ID field for association with the logical link ID field to provide a group ID for a plurality of management entities controlled by a single ONU. The Ethernet transmission frame is transmitted to a destination user independently of a physical (PHY) layer in the EPON system.

The method recited by present claim 1 is novel, and in view of the combination Sala and Rothenberg, would not have been obvious to a person of ordinary skill in the art at the time of invention. The presently claimed invention provides advantages in that, for example, by transmitting the Ethernet frame having the logical link ID field inserted therein as claimed, the method is a PHY independent technique that is compatible with a number of different physical environments associated with other physical layers and network topologies (specification at page 14, lines 5-17).

In contrast to the claimed invention, the combination of Sala and Rothenberg at best disclose a PHY emulation method so that the PHY emulates a point-to-point and/or shared communication link (see for example, Sala at page 2, paragraph [0043]). Applicant respectfully submits that such an emulation scheme is disclosed by the Applicant's Background at page 2, line 22, to page 3, line 3.

More particularly, Applicant respectfully submits that the emulation scheme of the combination of Sala and Rothenberg suffers from the same problems disclosed by the Applicant in the specification at page 3, line 17, to page 4, line 8, in that it is incompatible with a network of a different topology. Moreover, the combination of Sala and Rothenberg cannot determine whether an FCS check error is caused by defects of a link, or by other devices, or is caused by an unauthenticated message (specification at page 4, lines 5-8). Applicant respectfully submits that combination of Sala and

6

Amendment
Serial No. 10/634,700

Docket 5000-1-438

Rothenberg suffers from the same problems known in the art. In contrast, the method as recited in the present claims solves these problems in a novel and non-obvious way. Accordingly, Applicant respectfully submits that the combination of Sala and Rothenberg would have failed as a combination at the time of invention to have rendered any of the present claims to an artisan at the time of invention.

Applicant also respectfully submits that the combination of elements, as recited in the present claims, would not have been obvious as being within the ordinary level of skill in the art (*KSR International v. Teleflex*, 127 S.Ct. 1727, 82 USPQ2d 1385 (2007)).

Applicant respectfully submits that the combination of Sala and Rothenberg fails to disclose or suggest at least the foregoing recitations of claim 1. Applicant respectfully requests withdrawal of this ground of rejection.

With regard to the rejections of claims 2-5, each of these claims is believed to patentable at least for dependence from claim 1, and because of an independent basis for patentability, as each claim defines an additional aspect of the invention. Accordingly, the individual consideration of the patentability of each claim on its own merits is respectfully requested.

For all the foregoing reasons, it is respectfully submitted that all the present claims are patentable in view of the cited reference. A Notice of Allowance is respectfully requested.

While no fees are believed due at this time, please credit any overage or charge any deficiency to deposit account number 502-470.
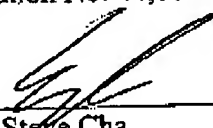
Amendment
Serial No. 10/634,700

Docket 5000-1-438

Should the Examiner deem that there are any issues, which may be best, resolved by telephone communication, please contact Applicant's undersigned Attorney at the number listed below.

Respectfully submitted,

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8